unpatentable over the Hannaford patent in view of US Patent No. 6,111,577 to Zilles ("the Zilles patent"). These rejections are respectfully traversed.

Examiner Interview on June 10, 2003

Applicants' representatives appreciate the courtesy extended by the Examiner during the telephone interview on June 10, 2003.

During the interview, Applicants' representatives discussed the shortcomings of the Hannaford patent, i.e., that the Hannaford patent fails to teach an actuator "coupled to and spaced apart from a touch pad sensor." During the interview, the Examiner did not propose a counterargument. Rather, in the Examiner's interview summary, the Examiner opined "[t]he Examiner notes, separation between the first actuator and encoder, and the second redundant actuator having no encoder for sensing motion in the xy plane." *See* Interview Summary, Paper No. 13. The Examiner's view was not presented during the interview and appears to be the basis of a new rejection based on further reflection after termination of the interview.

While the particular view presented in the interview summary was not discussed during the interview or in the Office Action, Applicants will now address the Examiner's statements from the interview summary in the interest of advancing prosecution of this application.

Independent claims 47 and 71 recites an actuator "coupled to and spaced apart from" the touchpad sensor. Independent claims 47, 60 and 71 further recite detecting "a degree of force applied to said touchpad sensor in a z-direction."

The Hannaford patent discloses an actuator (Fig. 5, item 32) and an encoder (not shown, *but see* encoder base 86). The Hannaford patent discloses that "[e]ach actuator 32, 34, 44 structure is implemented as a direct drive actuator and includes a flat coil, magnet, encoder, encoder base, codewheel, codewheel screw and code wheel base." (See column 4, lines 49-55). Because the actuator includes the encoder, separation between the encoder and the actuator is not possible. Additionally, the Hannaford patent states that "redundant sensing is also performed by including a sensor at each actuator." (See column 3, lines 6-8). This statement explicitly states the placement of the sensors is at each actuator, rather than having the actuator "*coupled to and spaced apart from*" the touch pad sensor, as recited by independent claims 47 and 71.

The Examiner further notes in the interview summary that the Hannaford patent indicates at "column 8, lines 59-61, for forces in the z direction, the rotational actuating structures respond to allow common movement of the end effector 14 and planar structure 20 along the z-axis." Applicants respectfully submit that the passage cited by the Examiner fails to teach or suggest a touchpad sensor configured to "detect a degree of force applied to said touchpad sensor in a z-direction," as recited in independent claims 47, 60 and 71. For at least these reasons, with respect to the Examiner's comments in the interview summary, independent claims 47, 60 and 71 are allowable over the Hannaford patent.

Rejection under 35 U.S.C. 103(a) over Hannaford

Claims 47-50, 52, 54, 56-60, 71-73, and 75 stand rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent No. 5,642,469 to Hannaford et al. ("the Hannaford patent"). The Examiner cites column 1, lines 52-67 and column 4, lines 1-5 as showing "a touch pad sensor configured to detect a position and motion of an object in the x-y plane." (See Office Action at p. 2).

Independent claims 47 and 71 recites an actuator "coupled to and spaced apart from" the touchpad sensor. Independent claims 47, 60 and 71 further recite detecting "a degree of force applied to said touchpad sensor in a z-direction."

The passages cited by the Examiner fail to teach or suggest such a sensor as recited by independent claims 47, 60 and 71. Specifically, the Hannaford patent states: "the control point 12 is defined at an end-effector 18. The manipulator 10 includes a planar structure 20 enabling motion in the x-y plane to define two degrees of freedom." Column 4, lines 1-5. The control point taught in Hannaford is simply incapable of "**detect[ing]** a position and motion of an object in the x-y plane" as recited by independent claims 47, 60 and 71 (emphasis added). Therefore, the control point of the Hannaford patent cannot be a "touchpad sensor" as recited in independent claims 47, 60 and 71.

Claim 60, further recites that the touchpad sensor is "further configured to detect a degree of force applied to said touchpad sensor in a z-direction." The Hannaford patent is silent with respect to sensing any force in a z-direction. Accordingly, the control point, as suggested by the

Examiner, does not teach or suggest detection of a degree of force in any direction, much less a z-direction as recited by independent claim 60.

The Examiner further states that the Hannaford patent teaches at least one actuator coupled to and spaced apart from the touch pad sensor. (See Office Action at p. 2). Specifically, the Examiner cites Figure 5, item 32 and Figure 4, item 12 for such a suggestion. Applicants note that Figure 4, item 12 is the control point of the device of the Hannaford patent. As discussed above, the Hannaford patent states that "an operator uses a pen-like or other tool 14 to apply forces/displacements to the control point 12." (See column 3, lines 64-66). The Hannaford patent further states that "[t]he manipulator 10 responds to the applied forces allowing control point 12 movement with three degrees of freedom within a workspace." (See column 1, line 66 to column 2, line 1). Based on these passages, it is clear that the control point of the device of the Hannaford patent is merely a mechanical manipulandum, and is, by itself, incapable of "detecting a position of an object," as required by independent claims 47, 60 and 71.

The Hannaford patent further fails to disclose or suggest an actuator "coupled to and spaced apart from" the sensor, as recited in independent claims 47 and 71. In fact, the Hannaford patent discloses placement of the sensors together with the actuators. As discussed above, the Hannaford patent states that "redundant sensing also is performed by including a sensor at each actuator in the parallel structure." (See column 3, lines 6-8, emphasis added). Accordingly, the Hannaford patent simply does not teach suggest an "actuator coupled to and spaced apart from [the] touchpad sensor" as recited in independent claims 47 and 71.

For at least these reasons, independent claims 47, 60, and 71 are allowable over the cited reference. Based at least on their dependence upon independent claims 47, 60 and 71, dependent claims 48-59, 61-70 and 72-76 are also allowable.

CONCLUSION

Applicants believe that a full and complete response has been made to the outstanding Office Action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that further personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

Prompt and favorable consideration of this Amendment is respectfully requested.

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